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The gut epithelia of mice expressing the fluorescently labeled tight junction proteins occludin (green) and ZO-1 (red). Marchiando et al. reveal that the cytokine TNF disrupts the barrier function of tight junctions by stimulating the caveolin-1–dependent endocytosis of occludin.

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Disrupting the centrosomal protein CDK5RAP2 causes centrosomes (red) to detach from the poles of the mitotic spindle (green). The protein—which is mutated in primary microcephaly—also promotes cell cycle arrest after DNA damage.
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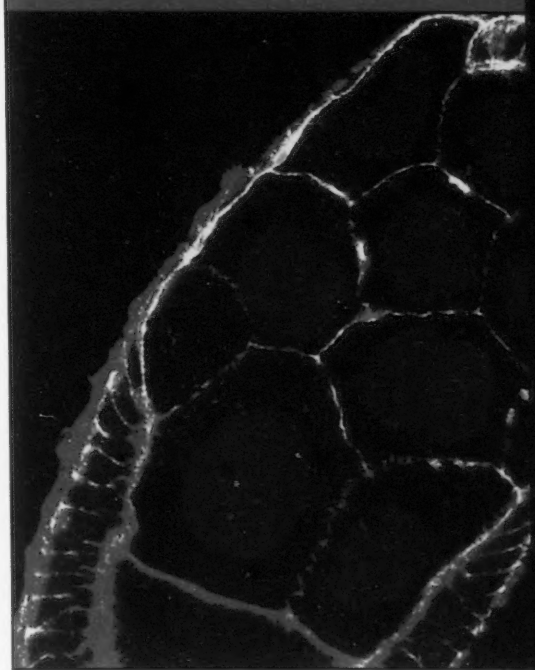

On the cover

Quinones et al. find that competition between pro- and anti-endocytic BAR domain proteins directs cell migration by regulating the trafficking and activity of guidance cue receptors. Border cells (top) don't migrate toward the ovary (bottom) in *Drosophila* egg chambers lacking the endocytic inhibitor Missing-In-Metastasis. The egg chambers are stained for F-actin (red), phosphotyrosine (green), and DNA (blue).
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289 HPat provides a link between deadenylation and decapping in metazoa
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353 I-BAR protein antagonism of endocytosis mediates directional sensing during guided cell migration
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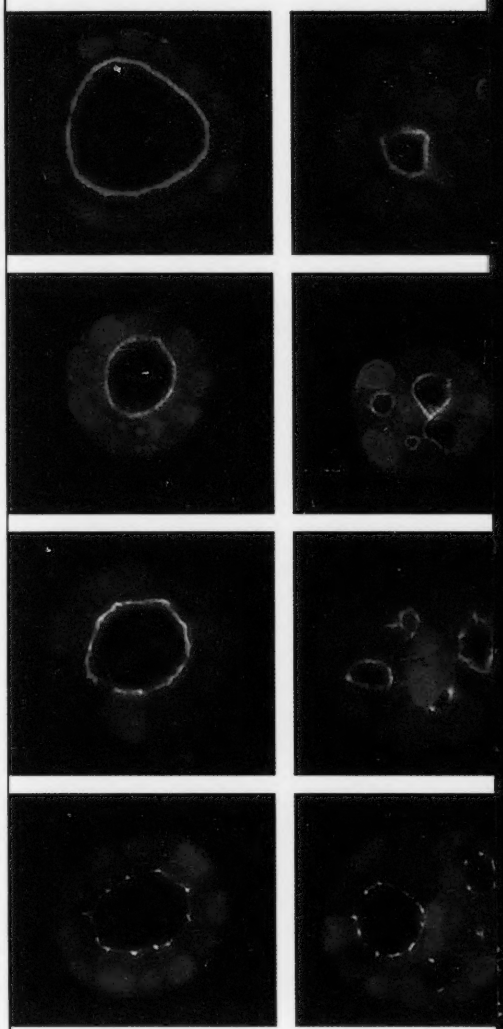

The polarity protein LGN orients mitotic spindles to direct epithelial morphogenesis. In the absence of LGN (right), MDCK cells form cysts with multiple lumens, although cell polarity (indicated by a variety of apical markers in red) is maintained.
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A cancer cell (red) extends a long invadopodium through a matrigel basement membrane (green). Schoumacher et al. reveal how the actin, microtubule, and vimentin cytoskeletons cooperate to drive this initial step of tumor metastasis.
See page 541.

481 LET-99 inhibits lateral posterior pulling forces during asymmetric spindle elongation in *C. elegans* embryos
Lori E. Krueger, Jui-Ching Wu, Meng-Fu Bryan Tsou, and Lesilee S. Rose

497 The structure of the Myo4p globular tail and its function in *ASH1* mRNA localization
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527 Lack of Apobec2-related proteins causes a dystrophic muscle phenotype in zebrafish embryos
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557 A two-tiered mechanism of EGFR inhibition by RALT/MIG6 via kinase suppression and receptor degradation
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601 Pcdp1 is a central apparatus protein that binds Ca^{2+}-calmodulin and regulates ciliary motility
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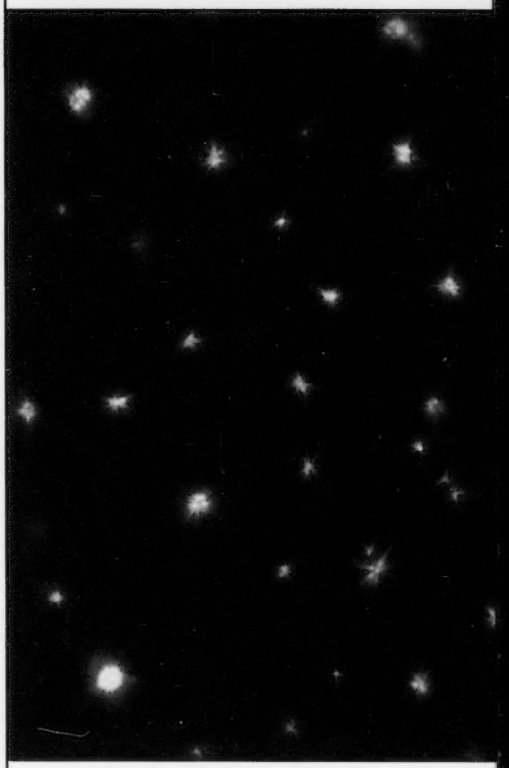

A mixture of tubulin (red) and the kinesin motor protein XCTK2 (green) self-organizes into microtubule asters in vitro. Hentrich and Surrey determine how XCTK2 and the oppositely directed motor Eg5 combine to assemble mitotic spindles.
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641 The Dam1 complex confers microtubule plus end–tracking activity to the Ndc80 kinetochore complex
Fabienne Lampert, Peter Hornung, and Stefan Westermann

651 Aurora A contributes to p150^{glued} phosphorylation and function during mitosis
Pierre Romé, Emilie Montembault, Nathalie Franck, Aude Pascal, David M. Glover, and Régis Giet

661 Tuba, a Cdc42 GEF, is required for polarized spindle orientation during epithelial cyst formation
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671 Disease-causing mutations in Parkin impair mitochondrial ubiquitination, aggregation, and HDAC6-dependent mitophagy
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681 Clasp-mediated microtubule bundling regulates persistent motility and contact repulsion in *Drosophila* macrophages in vivo
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691 Botulinum hemagglutinin disrupts the intercellular epithelial barrier by directly binding E-cadherin
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Stramer et al. image the actin filaments (green) and microtubules (purple) of *Drosophila* macrophages as they migrate in vivo. When two cells collide, their cytoskeletons briefly align before contact repulsion drives the cells apart.
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701 *Sox10* is required for Schwann cell identity and progression beyond the immature Schwann cell stage
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713 Cooperation of the Dam1 and Ndc80 kinetochore complexes enhances microtubule coupling and is regulated by aurora B
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725 The Cdc42 GEF Intersectin 2 controls mitotic spindle orientation to form the lumen during epithelial morphogenesis
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739 Quantitative proteomics combined with BAC TransgeneOmics reveals in vivo protein interactions
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755 Multiple Myo4 motors enhance *ASH1* mRNA transport in *Saccharomyces cerevisiae*
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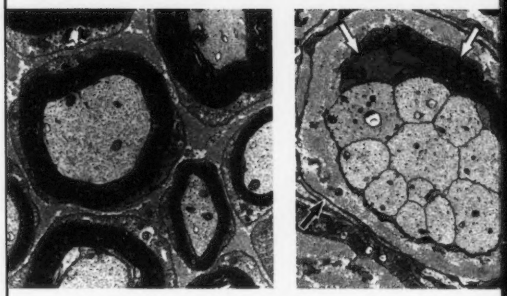
769 ERO1-β, a pancreas-specific disulfide oxidase, promotes insulin biogenesis and glucose homeostasis
Ester Zito, King-Tung Chin, Jaime Blais, Heather P. Harding, and David Ron



Finzsch et al. examine the function of Sox10 in mouse glial development by deleting the transcription factor from immature Schwann cells. In wild-type sciatic nerves (left), large-diameter axons are individually wrapped in thick myelin sheaths. In mutant nerves (right), a single Schwann cell surrounds multiple large and small axons.
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813 Dcp2 phosphorylation by Ste20 modulates stress granule assembly and mRNA decay in *Saccharomyces cerevisiae*
Je-Hyun Yoon, Eui-Ju Choi, and Roy Parker

829 The role of UDP-Glc:glycoprotein glucosyltransferase 1 in the maturation of an obligate substrate prosaposin
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859 Nebulin regulates actin filament lengths by a stabilization mechanism
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871 Multiple mechanisms collectively regulate clathrin-mediated endocytosis of the epidermal growth factor receptor
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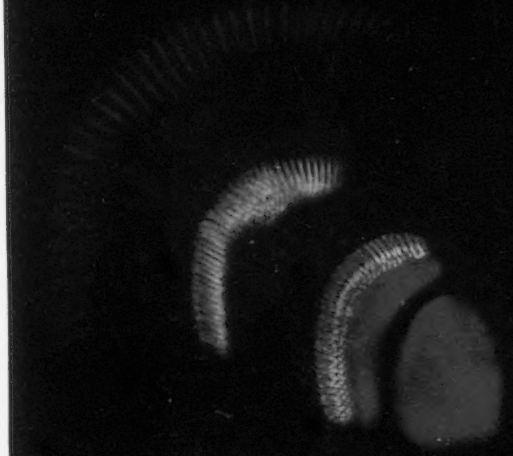
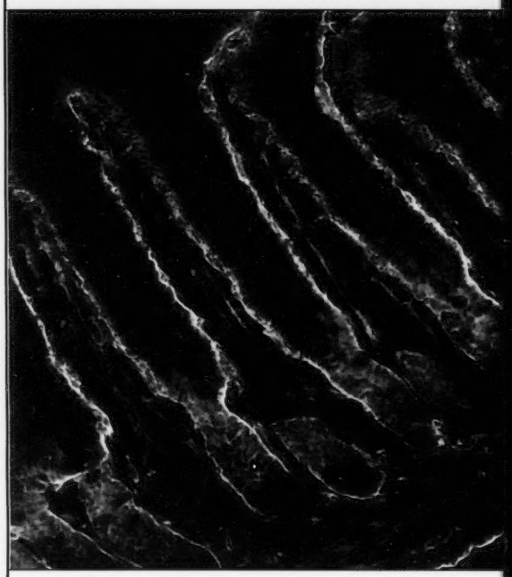


On the cover

In the *Drosophila* visual system, photoreceptor neurons (green) project toward the optic lobe and form synaptic connections in the neuropil (red). Nuclei are labeled blue. Williamson et al. show that the neuron-specific v-ATPase subunit *v100* has a dual function in sorting and degrading proteins through the endolysosomal pathway, protecting the photoreceptors from neurodegeneration.
See page 885.

885 A dual function of V0-ATPase a1 provides an endolysosomal degradation mechanism in *Drosophila melanogaster* photoreceptors
W. Ryan Williamson, Dong Wang, Adam S. Haberman, and P. Robin Hiesinger

901 Laminin-based cell adhesion anchors microtubule plus ends to the epithelial cell basal cortex through LL5α/β
Azusa Hotta, Tomomi Kawakatsu, Tomoya Nakatani, Toshitaka Sato, Chiyuki Matsui, Taiko Sukezane, Tsuyoshi Akagi, Tomoko Hamaji, Ilya Grigoriev, Anna Akhmanova, Yoshimi Takai, and Yuko Mimori-Kiyosue



Hotta et al. reveal how signaling from the extracellular matrix stabilizes basal microtubules in epithelial cells. The microtubule-anchoring factors LL5s (red) colocalize at the basal cortex of mouse intestinal cells with integrin α6 (cyan) and the laminin basement membrane (green).
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• Acid sphingomyelinase deals the seal
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937 Vertebrate kinetochore protein architecture: protein copy number
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945 Tubulin polyglutamylation stimulates spastin-mediated microtubule severing
Benjamin Lacroix, Juliette van Dijk, Nicholas D. Gold, Julien Guizetti, Gudrun Aldrian-Herrada, Krzysztof Rogowski, Daniel W. Gerlich, and Carsten Janke

955 Role of kinase-independent and -dependent functions of FAK in endothelial cell survival and barrier function during embryonic development
Xiaofeng Zhao, Xu Peng, Shaogang Sun, Ann Y.J. Park, and Jun-Lin Guan

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967 G2 phase chromatin lacks determinants of replication timing
Junjie Lu, Feng Li, Christopher S. Murphy, Michael W. Davidson, and David M. Gilbert

981 A robust cell cycle control mechanism limits E2F-induced proliferation of terminally differentiated cells in vivo
Laura A. Buttitta, Alexia J. Katzaroff, and Bruce A. Edgar

997 MAPK signaling to the early secretory pathway revealed by kinase/phosphatase functional screening
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1013 Autoinhibition of the kinesin-2 motor KIF17 via dual intramolecular mechanisms
Jennetta W. Hammond, T. Lynne Blasius, Virupakshi Soppina, Dawen Cai, and Kristen J. Verhey

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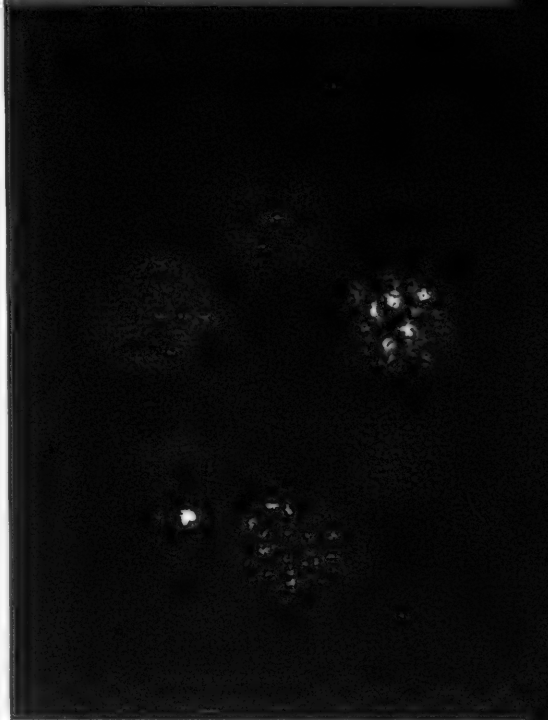


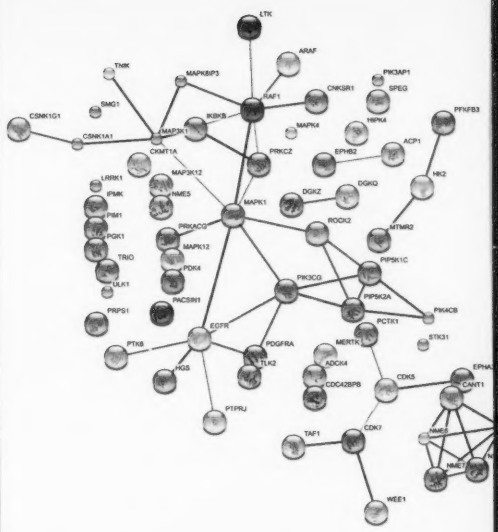
On the cover

Cells replicate their genome in a well-defined order. The bottom three nuclei show active sites of DNA synthesis (red) at different stages of S phase. This program is set at the "timing decision point" (TDP) during G1. A post-TDP nucleus replicating in vitro (top right) follows the program, indicated by the colocalization (white) of DNA synthesis and late-replicating heterochromatin (blue), whereas a pre-TDP nucleus (top) shows no colocalization. Lu et al. reveal that the timing information is lost in G2 nuclei (top left).

See page 967.

1027 Exocytosis of acid sphingomyelinase by wounded cells promotes endocytosis and plasma membrane repair
Christina Tam, Vincent Idone, Cecilia Devlin, Maria Cecilia Fernandes, Andrew Flannery, Xingxuan He, Edward Schuchman, Ira Tabas, and Norma W. Andrews

1039 The small GTPases ARL-13 and ARL-3 coordinate intraflagellar transport and ciliogenesis
Yujie Li, Qing Wei, Yuxia Zhang, Kun Ling, and Jinghua Hu



Farhan et al. perform an RNAi screen to identify a network of kinases and phosphatases regulating the early secretory pathway.
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1054 • Clathrin teams up to strengthen the spindle
• Secret passage to the inner nuclear membrane
• Lysosomes don't accentuate the negative
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1071 Joining the interface: a site for Nmd3 association on 60S ribosome subunits
Marlene Oeffinger

1075 Neighborly relations: cadherins and mechanotransduction
Michael Smutny and Alpha S. Yap

RESEARCH ARTICLES

Reports

1079 Characterization of the nuclear export adaptor protein Nmd3 in association with the 60S ribosomal subunit
Jayati Sengupta, Cyril Bussiere, Jesper Pallesen, Matthew West, Arlen W. Johnson, and Joachim Frank

1087 Adenomatous polyposis coli protein nucleates actin assembly and synergizes with the formin mDia1
Kyoko Okada, Francesca Bartolini, Alexandra M. Deaconescu, James B. Moseley, Zvonimir Dogic, Nikolaus Grigorieff, Gregg G. Gundersen, and Bruce L. Goode

1097 Clathrin heavy chain mediates TACC3 targeting to mitotic spindles to ensure spindle stability
Chiou-Hong Lin, Chi-Kuo Hu, and Hsiu-Ming Shih

1107 Vinculin potentiates E-cadherin mechanosensing and is recruited to actin-anchored sites within adherens junctions in a myosin II–dependent manner
Quint le Duc, Quanming Shi, Iris Blonk, Arnoud Sonnenberg, Ning Wang, Deborah Leckband, and Johan de Rooij

Articles

1117 DNA polymerases ν and θ are required for efficient immunoglobulin V gene diversification in chicken
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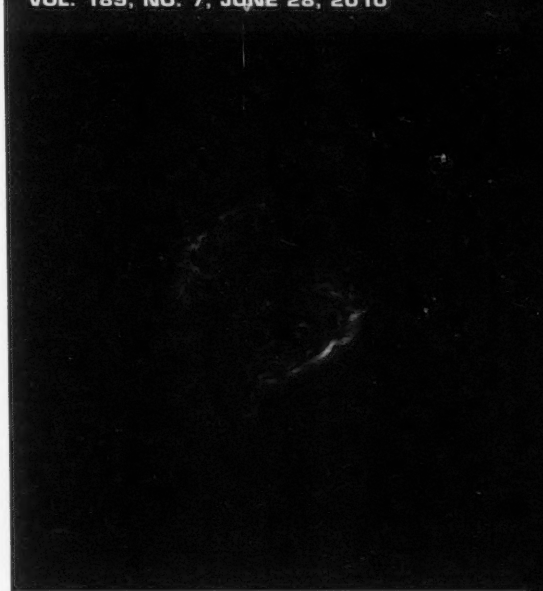
Articles with related stories in the IN THIS ISSUE section have page numbers in RED; articles related to IN FOCUS have page numbers in BLUE; articles with COMMENTS have page numbers in GREEN.



On the cover

An artistically rendered image showing that the spindle-organizing protein TACC3 (red) fails to localize to the mitotic spindle (green) in the absence of the clathrin heavy chain, resulting in chromosome (blue) misalignment.
See page 1097.

1129 The nucleoporin Nup188 controls passage of membrane proteins across the nuclear pore complex
Gandhi Theerthagiri, Nathalie Eisenhardt, Heinz Schwarz, and Wolfram Antonin

1143 Dual recognition of CENP-A nucleosomes is required for centromere assembly
Christopher W. Carroll, Kirstin J. Milks, and Aaron F. Straight

1157 Mammalian target of rapamycin regulates miRNA-1 and follistatin in skeletal myogenesis
Yuting Sun, Yejing Ge, Jenny Drnevich, Yong Zhao, Mark Band, and Jie Chen

1171 A cation counterflux supports lysosomal acidification
Benjamin E. Steinberg, Kassidy K. Huynh, Alexandre Brodovitch, Sabrina Jabs, Tobias Stauber, Thomas J. Jentsch, and Sergio Grinstein

Retraction

1187 SMK-1/PPH-4.1–mediated silencing of the CHK-1 response to DNA damage in early *C. elegans* embryos
Seung-Hwan Kim, Antonia H. Holway, Suzanne Wolff, Andrew Dillin, and W. Matthew Michael

Sun et al. describe how the mTOR kinase drives expression of a microRNA to boost the production of follistatin, a secreted protein that promotes the fusion of immature myocytes into multinucleate myotubes (green). Myocyte fusion is blocked by the mTOR inhibitor rapamycin (middle) but is restored by the addition of exogenous follistatin (bottom).
See page 1157.